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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/697,025 | 10/26/2000 | Mehrdad Nikoonahad | TNCR.183US0 | 3437 |
| 36257 | 7590 | 01/23/2004 | EXAMINER | |
| PARSONS HSUE & DE RUNTZ LLP 655 MONTGOMERY STREET SUITE 1800 SAN FRANCISCO, CA 94111 | | | SMITH, ZANDRA V | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2877 | |

DATE MAILED: 01/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/697,025

Applicant(s)

NIKOONAHAD ET AL.

Examiner

Zandra V. Smith

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-143 is/are pending in the application.
4a) Of the above claim(s) 64-143 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 48-50 is/are allowed.
- 6) ☐ Claim(s) 1-5, 7, 10-13, 15-20, 22, 25-30, 32-40, 45-47, 51-56 and 61-63 is/are rejected.
- 7) ☒ Claim(s) 6, 8, 9, 14, 21, 23, 24, 31, 35, 41-44 and 57-60 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4/9/01
4/8/03
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim 61 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 55. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Election/Restrictions

Claims 63-143 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper filed 06 October 2003.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 7, 10, 16-17, 22, 25, 33, 51, and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by *Everett et al. (5,808,742)*.

As to **claims 1, 7, 16-17, 22, 51, and 56** Everett discloses an optical alignment apparatus having multiple parallel alignment marks, comprising:

a source providing radiation to illuminate two periodic patterns simultaneously (13, 21, fig. 5);

a detector and optics collecting radiation from the patterns to form an image of at least a portion of the two patterns in a two dimensional array detector (CCD); and

a processor determining misalignment between the structures from outputs of the detectors (col. 4, lines 30-31 and col. 6, lines 26-45).

As to **claim 2**, Everett discloses everything claimed, as applied above, in addition a phase difference is determined (col. 6, lines 35-40).

As to **claims 3 and 18**, Everett discloses everything claimed, as applied above, in addition the patterns are illuminated along a direction normal to the reference plane (see fig. 5).

As to **claims 10 and 25**, Everett discloses everything claimed, as applied above, in addition the light source is broadband (col. 5, line 5-10).

As to **claim 33**, Everett discloses everything claimed, as applied above, in addition the light is collected along one or more specular direction (col. 7, line 36-col. 8, line 5).

Claims 13, 15, 34, and 36 are rejected under 35 U.S.C. 102(b) as being anticipated by *Nose et al. (5,333,050)*.

As to **claims 13 and 34**, Nose discloses a measuring method and apparatus for measuring the positional relation of first and second gratings, comprising:

providing a beam of radiation to illuminate each portion of the structures (col. 19, line 62-col. 20, line 5);

collecting radiation from the illuminated portion of each of the two structures and directing the collected radiation from each structure to a corresponding detector; and

determining misalignment between structures from outputs of the detectors (col. 20, lines 36-65).

As to **claims 15 and 36**, Nose discloses everything claimed, as applied above, in addition the collecting and directing employs optics, and locating apertures (col. 20, lines 36-65).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-5, 11-12, 19-20, 26-30, 32, 37-40, 45-47, 52-55, 61-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Everett et al. (5,808,742)*.

As to **claims 4-5, 11-12, 19-20, 26, 32, and 62-63**, Everett discloses everything claimed, as applied above, in addition an embodiment is provided to illuminate and collect light at oblique angles (col. 1, lines 55-65). It would have been obvious to one having ordinary skill in the art at the time of invention to prevent the need for removal of alignment optics during lithographic exposure through the plate.

As to **claim 27**, Everett discloses everything claimed, as applied above, in addition a refractive element is included to illuminate and collect radiation (see fig. 5).

As to **claims 28-30, 38-39, 46-47, and 52-54**, Everett discloses everything claimed, as applied above, with the exception of the numerical aperture of the refractive element, however it would have been obvious to one having ordinary skill in the art at the time of invention to use a refractive element with the claimed numerical aperture as a means to ensure that the structures are sufficiently resolved.

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As to **claims 37, 40 and 45**, Everett discloses an optical alignment apparatus having multiple parallel alignment marks, comprising:

a source providing radiation to illuminate two periodic patterns simultaneously (13, 21, fig. 5);

a detector and optics collecting radiation from the patterns to form an image of at least a portion of the two patterns in a two dimensional array detector (CCD); and

a processor determining misalignment between the structures from outputs of the detectors (col. 4, lines 30-31 and col. 6, lines 26-45). Everett differs from the claimed invention the numerical aperture of the collecting optics is not provided, however it would have been obvious to one having ordinary skill in the art at the time of invention to use a refractive element with the claimed numerical aperture as a means to ensure that the structures are sufficiently resolved.

Claims 55 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Everett et al. (5,808,742)* in view of *Nose et al. (5,333,050)*.

As to **claims 55 and 61**, Everett discloses everything claimed, as applied above, with the exception of a stepper or etched, however since the alignment marks are on a mask and used for the purpose of optical alignment (col. 1, lines 15-25) the use of stepper would have been an obvious means to move the system to facilitate alignment.

Allowable Subject Matter

Claims 48-50 are allowable over the prior art of record.

Claims 6, 8-9, 14, 21, 23-24, 31, 35, 41-44, 57-60 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, taken alone or in combination, fails to disclose or render obvious detection at a normal direction after oblique illumination, summing outputs of the detectors, cross correlating, causing relative motion between apertures and detectors, 10 second integration time, mechanical shutter

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bartelt et al (4,728,19) ; Brueck et al. (5,343,292).

Fax/Telephone Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zandra V. Smith whose telephone number is (703) 305-7776.

The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703)308-4881. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

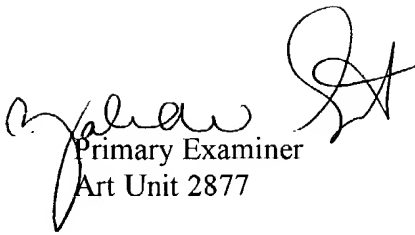
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0530.


Zandra V. Smith

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Primary Examiner
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12/29/03